

## CLAIMS

What is claimed is:

1. Optical communication equipment comprising:

a plurality of communication nodes having an optical signal transmitter for transmitting the optical signals and an optical label signals transmitter for transmitting the optical label signals carrying the control information concerning the routing of the optical signals respectively , for transmitting the optical signals and the corresponding optical label signals giving a relative transmission time lag;

a router having wavelength demultiplexers connected to each of the communication nodes through the optical transmission line for separating the optical signals from the optical label signals, optical label signal receivers for receiving the optical label signals separated by one of the wavelength demultiplexers, optical splitters for branching the optical signals separated by one of the wavelength demultiplexers to a plurality of optical paths of a substantially the same length, a plurality of optical gates for routing by passing or intercepting the optical signal with respect to the corresponding optical path of the a plurality of optical paths according to the information carried by the optical label signal, said router pass or intercept the optical signal by selectively driving the a plurality of optical gates according to the control information of the optical label signal received by one of the optical label signal receivers;

each of said communication nodes comprises:

an optical signal transmission means for transmitting said optical signals addressed to the communication node that transmitted it through said optical transmitter;

an optical label signal transmission means for transmitting said optical label signal carrying the routing information of said optical signal through said optical label signal transmitter;

an optical receiver for receiving said optical signal addressed to the communication node that transmitted it and returned through said router;

a diagnosing means for diagnosing said optical signal received by said optical receiver; and

an adjusting means for adjusting the transmission time lag between said optical signal and said optical label signal according to the result of the diagnosis by the diagnosing means.

2. Optical communication equipment according to claim 1, wherein said router includes optical gates, which are set in the open state upon receipt of said optical signal transmitted from each communication node addressed to the communication node that transmitted it and said corresponding optical label signal.

3. Optical communication equipment according to claim 2, wherein said router is connected to optical transmission lines for returning said optical signal addressed to the communication node that transmitted it, which has passed the optical gate, to the communication node that transmitted said optical signal.

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